Applicant: Fumio Saitoh et al.

Serial No.: 10/627,353

Attorney's Docket No.: 14157011001 / P1P2003102US

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Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A film formed of a polybenzazole precursor, wherein the film is produced by solidifying the polybenzazole precursor oriented along a direction of a magnetic or electric field applied to the polybenzazole precursor in a given direction by the application of a magnetic or electric field such that the film has strong anisotropy, said polybenzazole precursor having a repeating unit shown by the following chemical formula (1) or (2),

$$\begin{array}{c|cccc}
O & H \\
C & N & XH \\
Ar^1 & & \dots & (2)
\end{array}$$

$$\begin{array}{c|cccc}
HX & N & C & Ar^2 & & \dots & (2)
\end{array}$$

wherein X is any one selected from the group consisting of a sulfur atom, an oxygen atom, and an imino group; Ar^1 and Ar^2 are selected from aromatic hydrocarbon groups, and n is an integer of 10 to 500.

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2. (Currently Amended) The film according to claim 1, wherein the given direction the direction of the magnetic or electric field corresponds to the a direction of the thickness of the film.

- 3. (Original) The film according to claim 1, having at least one of optical, magnetic, mechanical, thermal and electrical anisotropies.
- 4. (Currently Amended) A method of producing a film formed of a polybenzazole precursor, the polybenzazole precursor having a repeating unit shown by the following chemical formula (1) or (2),

$$\begin{array}{c|ccccc}
O & H & & & & \\
\parallel & \downarrow & & & & \\
C & N & XH & & & \\
HX & N & C & Ar^2 & & & \\
& & & & & \\
H & O & & n & & \\
\end{array}$$
... (2)

wherein X is any one selected from the group consisting of a sulfur atom, an oxygen atom, and an imino group; Ar^1 and Ar^2 are selected from aromatic hydrocarbon groups; and n is an integer of 10 to 500, comprising:

preparing a liquid containing the polybenzazole precursor;

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spreading the liquid in the form of a film;

applying a magnetic or electric field to the spread liquid in such a manner that the polybenzazole precursor in the spread liquid is oriented along a direction of the magnetic or electric field so that the polybenzazole precursor in the spread liquid is oriented in a given direction, such that the film to be formed has strong anisotropy; and

solidifying the spread liquid after the application of the magnetic or electric field.

- 5. (Original) The method according to claim 4, wherein said liquid either is a solution of the polybenzazole precursor prepared by dissolving the polybenzazole precursor in a solvent or is a molten state of polybenzazole precursor.
- 6. (Currently Amended) A film formed of a polybenzazole, wherein the film is produced by solidifying the polybenzazole oriented along a direction of a magnetic or electric field applied to the polybenzazole in a given direction by the application of a magnetic or electric field such that the film has strong anisotropy.
- 7. (Original) The film according to claim 6, wherein said polybenzazole has a repeating unit shown by following chemical formula (3) or (4),

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wherein Y is any one selected from the group consisting of a sulfur atom, an oxygen atom, and an imino group; Ar^1 and Ar^2 are selected from aromatic hydrocarbon groups; and n is an integer of 10 to 500.

- 8. (Currently Amended) The film according to clam 6, wherein the given direction the direction of the magnetic or electric field corresponds to the <u>a</u> direction of the thickness of the film.
- 9. (Original) The film according to claim 6, having at least one of optical, magnetic, mechanical, thermal and electrical anisotropies.
- 10. (Currently Amended) A method of producing a film formed of a polybenzazole, comprising:

$$\begin{array}{c|cccc}
O & H \\
C & N & XH \\
Ar^1 & & & \dots & (2)
\end{array}$$

$$\begin{array}{c|cccc}
HX & N & C & Ar^2 & & & \dots & (2)
\end{array}$$

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preparing a liquid containing a polybenzazole precursor, as a precursor of the polybenzazole, the polybenzazole precursor having a repeating unit shown by the following chemical formula (1) or (2),

wherein X is any one of selected from the group consisting of a sulfur atom, an oxygen atom, and an amino group consisting of a sulfur atom, an oxygen atom, and an imino group; Ar^1 and Ar^2 are selected from aromatic hydrocarbon groups; and n is an integer of 10 to 500;

spreading the liquid in the form of a film;

applying a magnetic or electric field to the spread liquid in such a manner that the polybenzazole precursor in the spread liquid is oriented along a direction of the magnetic or electric field so that the polybenzazole precursor in the spread liquid is oriented in a given direction, such that the film to be formed has strong anisotropy;

chemically converting the polybenzazole precursor in the spread liquid into the polybenzazole after the application of the magnetic or electric field; and

solidifying the spread liquid after the chemical conversion of the polybenzazole precursor into the polybenzazole.

- 11. (Original) The method according to claim 10, wherein said liquid either is a solution of the polybenzazole precursor prepared by dissolving the polybenzazole precursor in a solvent or is a molten state of the polybenzazole precursor.
- 12. (Currently Amended) A method of producing a film formed of a polybenzazole, comprising:

preparing a liquid containing a polybenzazole precursor, as a precursor of the polybenzazole, the polybenzazole precursor having a repeating unit shown by the following chemical formula (1) or (2),

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$$\begin{array}{c|cccc}
O & H \\
C & N & XH \\
Ar^1 & & \dots & (2)
\end{array}$$

$$\begin{array}{c|ccccc}
HX & N & C & Ar^2 & & & \\
H & O & & n & & \\
\end{array}$$

wherein X is any one selected from the group consisting of a sulfur atom, an oxygen atom, and an imino group; Ar1 and Ar2 are selected from aromatic hydrocarbon groups; and n is an integer of 10 to 500;

spreading the liquid in the form of a film;

applying a magnetic or electric field to the spread liquid in such a manner that the polybenzazole precursor in the spread liquid is oriented along a direction of the magnetic or electric field so that the polybenzazole precursor in the spread liquid is oriented in a given direction; such that the film to be formed has strong anisotropy;

solidifying the spread liquid after the application of the magnetic or electric field so as to produce a precursor film, as a film of the polybenzazole precursor; and

chemically converting the polybenzazole precursor film, as a film of the polybenzazole precursor; and

chemically converting the polybenzazole precursor contained in said precursor film into the polybenzazole.

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13. (Original) The method according to claim 12, wherein said liquid either is a solution of the polybenzazole precursor prepared by dissolving the polybenzazole precursor in a solvent or is a molten state of the polybenzazole precursor.

14. (Currently Amended) A method of producing a film formed of a polybenzazole; comprising:

preparing a liquid containing the polybenzazole;

spreading the liquid in the form of a film;

applying a magnetic or electric field to the spread liquid in such a manner that the polybenzazole in the spread liquid is oriented along a direction of the magnetic or electric field so that the polybenzazole in the spread liquid is oriented in a given direction, such that the film to be formed has strong anisotropy; and

solidifying the spread liquid after the application of the magnetic or electric field.

15. (Original) The method according to claim 14, wherein said polybenzazole has a repeating unit shown by the following chemical formula (3) or (4),

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wherein Y is any one selected form the group consisting of a sulfur atom, an oxygen atom, and an imino group; Ar^1 and Ar^2 are selected from aromatic hydrocarbon groups; and n is an integer of 10 to 500.

16. (Original) The method according to claim 14, wherein the liquid either is a solution of the polybenzazole prepared by dissolving the polybenzazole in a solvent or is a molten state of the polybenzazole.

- 17. (New) The film according to claim 1, wherein the magnetic or electric field is applied to improve the anisotropy of the film.
- 18. (New) The method according to claim 4, wherein the magnetic or electric field is applied to improve the anisotropy of the film to be formed.
- 19. (New) The film according to claim 6, wherein the magnetic or electric field is applied to improve the anisotropy of the film.
- 20. (New) The method according to claim 10, wherein the magnetic or electric field is applied to improve the anisotropy of the film to be formed.
- 21. (New) The method according to claim 12, wherein the magnetic or electric field is applied to improve the anisotropy of the film to be formed.
- 22. (New) The method according to claim 14, wherein the magnetic or electric field is applied to improve the anisotropy of the film to be formed.
- 23. (New) The film according to claim 1, wherein the polybenzazole precursor is uniaxially oriented by the application of the magnetic or electric field.

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24. (New) The method according to claim 4, wherein the polybenzazole precursor is uniaxially oriented by the application of the magnetic or electric field.

- 25. (New) The film according to claim 6, wherein the polybenzazole is unlikely oriented by the application of the magnetic or electric field.
- 26. (New) The method according to claim 10, wherein the polybenzazole precursor is uniaxially oriented by the application of the magnetic or electric field.
- 27. (New) The method according to claim 12, wherein the polybenzazole precursor is uniaxially oriented by the application of the magnetic or electric field.
- 28. (New) The method according to claim 14, wherein the polybenzazole is uniaxially oriented by the application of the magnetic or electric field.